Controlling Chemicals

The Politics of Regulation in Europe and the United States

RONALD BRICKMAN
SHEILA JASANOFF
THOMAS ILGEN

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The Chemical Industry: Regulatory Challenges and Adaptive Strategies

The influence of industry on regulatory policy has long been debated by political actors and by scholars. Much of the early American work on the subject argued that, with time, all regulated industries succeeded both in "capturing" would-be regulators and in manipulating the regulatory process in ways that served their interests.[1] In Europe, too, while scholars have been less attentive to specific regulatory issues, the power of industry to mold governmental policy has been a constant theme of radical groups and parties on the left which have often viewed nationalization as the only appropriate corrective. However, more recent studies of the social regulation of the 1960s and 1970s, regulation undertaken with newly designed tools and procedures, have claimed that industry influences have been curbed and that public interest groups and dedicated public officials have been successful in ensuring that regulatory agencies remain faithful to their legislative mandates.[2] Indeed,

[1] See, for example, Marver Bernstein, *Regulating Business by Independent Commission* (Princeton: Princeton University Press, 1955); Gabriel Kolko, *Railroads and Regulation, 1877–1916* (Princeton: Princeton University Press, 1965); and George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science,* no. 2 (Spring 1971), pp. 3–21.

[2] See Paul Sabatier, "Social Movements and Regulatory Agencies: Toward a More Adequate—and Less Pessimistic—Theory of 'Clientele Capture'," *Policy Sciences,* 6, no. 3 (1975), 301–42. See also Paul J. Quick, *Industry Influence in Federal Regulatory Agencies* (Princeton: Princeton University Press, 1981).

American industry spokesmen in the 1970s, discussing the issue of chemical control, gave the impression that affected firms had little or no impact on policy-making decisions. While much less talk of this sort is heard in the American political climate of the 1980s, it is clear that industry seldom defines and dictates the outcomes of regulatory debates.

Our purpose in this chapter is to try to evaluate the impact of industry on the regulatory process of chemical control in each of the four countries. The position we take is between the extremes of inevitable "capture," on the one hand, and industry impotence, on the other. Targeted firms have most certainly experienced a growing regulatory burden over the past two decades, yet they have been remarkably successful in assuring that these new obligations have had only modest impact on industrial performance by arguing effectively for standards that are economically reasonable and technologically practicable and by insisting on a manageable pace of implementation. What is most striking in the analysis that follows is that, while firms faced similar regulatory challenges in the four countries and set similar goals to address those challenges, they adopted very different strategies to do so. And, further, those varied strategies produced roughly similar results for firms in each of the four countries, though the costs of American and European approaches differed sharply. In view of our general theme (elaborated in chapters 3–5) that institutional arrangements define how the regulatory game is played in each country, the varied industry responses are not surprising. That no one national industry seems to have a particular advantage in shaping regulatory outcomes is also consistent with our finding of cross-national policy convergence.

The Chemical Industry

Unlike much of the "social" regulation of the 1960s and 1970s, which aims at a large and diffuse group of industries and, according to one author, accounts for diminished industry influence,[3] efforts to control hazardous substances have focused almost exclusively on the chemical industry. Other sectors that use chemical products or produce other hazardous materials are subject to

[3] James Q. Wilson, "The Politics of Regulation," in James Q. Wilson, ed., *The Politics of Regulation* (New York: Basic Books, 1980). Wilson argues that many of these issues are characterized by what he calls *majoritarian* politics, wherein social benefits and costs are widely distributed: "Interest groups have little incentive to form around such issues because no small, definable segment of society . . . can expect to capture a disproportionate share of the benefits or avoid a disproportionate share of the burdens" (p. 367). Much of this reasoning regarding interest group behavior was developed in Mancur Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965).

some of these regulatory controls, but the chemical industry has been hit hardest, and chemical firms and trade associations have been the principal opponents of governmental intervention.

Prior to the 1970s, government regulation of chemical substances was limited to food additives, pesticides, and drugs, with some attention given to workplace exposures and to plant siting and construction. For some specialized firms, like pharmaceuticals, regulations have had important consequences for company performance over the past twenty years, but for the average large and widely diversified chemical concern, regulated products were but a small proportion of company sales. However, greater scrutiny of workplace hazards, mandatory premarket notification of new chemicals, and growing concern about toxic wastes in the 1970s made regulatory politics a part of every firm's policy agenda.

The challenges of regulation might have been more easily met if the industry did not already face serious difficulties that threatened to end a postwar record of tremendous growth and profit.[4] Heavy dependence on petroleum feedstocks raised problems of price and supply after the oil crisis of 1973–74, and the subsequent recession left the industry with declining sales, surplus capacity, and falling profits. The Europeans were burdened with buy-back or compensation deals that had been concluded with Eastern Europe in the late 1960s. By the mid 1970s, Eastern bloc countries were exporting low-priced fertilizers, synthetic rubber, and other basic chemicals into Western markets. Moreover, the worldwide glut in chemicals was likely to worsen in the 1980s, when Middle Eastern and other third-world producers were expected to begin exporting chemical products. Perhaps most disturbing was the talk of "maturity" in chemicals, the suggestion that the postwar boom in the sector was ending and that growth levels typical of other industries should be anticipated. For an industry driven by rapid innovation and technological change and accustomed to growth levels double those of other industries and booming international trade and investment, the 1970s were sobering years indeed.

Into this economic environment, governments introduced new regulations. Already burdened by the problems of several flagging industrial sectors, national leaders were understandably uneasy about further disrupting the performance of the postwar success story, and such official sensitivity was undoubtedly an asset to chemical leaders in their dialogue with government about the form and extent of intervention. The distinctive features of the modern chemical industry—its diversity, its reliance on innovation and technological change, and its international orientation—give us important clues to its response to the regulatory challenges of the 1970s.[5]

[4]Much of the material on the development of the chemical industry is taken from Thomas L. Ilgen, "'Better Living through Chemistry': The Chemical Industry in the World Economy," *International Organization,* 36 (Fall 1983), 647–80.

The Challenges of Regulation

Regulations in all four countries have imposed two related obligations on industry that are linked to the control of hazardous substances. The first, derived from each country's acceptance of the "polluter pays principle," requires that manufacturers pay for the control or elimination of unacceptable exposures associated with chemical production or use. The second, following from the same principle, indicates that producers of certain groups of chemicals, notably food additives and pesticides, demonstrate that their products are safe for use prior to marketing. Reducing exposures has meant changes in product design or use or in the design and construction of engineering controls or other protective devices for use in the work environment. Assuring that substances are safe has led to the generation of scientific information through an expanded program of chemical testing.

Industry spokesmen argue that these obligations raise a number of serious issues that will affect the future of their firms. First, they worry that regulation will significantly raise the production costs of chemicals already on the market. To limit such costs, industry spokesmen have battled hard for flexibility in the achievement of workplace standards, preferring the use of protective equipment to the more costly engineering controls. Moreover, they have consistently resisted efforts to require testing of old chemicals, which absorbs research energies and shaves profit margins. Firms have also argued for limits on data requirements and record-keeping obligations.

Second, industry leaders are concerned that regulation will result in lower levels and changed patterns of innovation, the lifeblood of the industry.[6] Test-

[5]The absence of cross-national work on regulatory policy is often lamented by American scholars but has seldom resulted in new studies. Notable exceptions are Henry G. Grabowski et al., "Estimating the Effects of Regulation on Innovation: An International Comparative Analysis of the Pharmaceutical Industry," *Journal of Law and Economics,* 21, no. 1 (April 1978), 133–65, and Steven Kelman, *Regulating America, Regulating Sweden: A Comparative Study of Occupational Safety and Health Policy* (Cambridge, Mass.: MIT Press, 1981). For an examination of the control of hazardous chemicals in Canada against the backdrop of U.S. and British regulatory policy, see Thomas L. Ilgen, "Between Europe and America, Ottawa and the Provinces: Regulating Toxic Substances in Canada," *Canadian Public Policy* (forthcoming).

[6]The literature on the impact of toxic chemical regulation on innovation is much less developed, though it is growing rapidly. Foster D. Snell, Inc., "A Study of the Potential Economic Impacts of the Proposed Toxic Substances Control Act (TSCA)," (unpublished paper) examined a number of expected consequences: (1) increased industry concentration;

ing requirements raise the costs of bringing new products to the market, encouraging firms to concentrate on making existing products better and producing them more efficiently rather than sinking funds into risky new ventures. Moreover, it is argued that regulation discourages innovation in small-volume chemicals, where expected returns are not sufficient to offset testing costs. Testing is also disproportionately burdensome for small, highly innovative chemical firms, which lack the resources to mount a sophisticated screening program.[7] Weaken the incentives to innovate, so the industry argues, and you will transform chemicals into just another "mature" or declining industry.

To justify their fears, chemical leaders cite the impact of regulation on innovation in pesticides and drugs in the United States.[8] For both, the cost of

(2) increased costs of specialized, low-volume new substances; (3) wasting of patent time, and (4) test marketing in other countries. See also Nicholas Ashford and George R. Heaton, "The Effects of Health and Environmental Regulation on Technological Change in the Chemical Industry: Theory and Evidence," in Christopher T. Hill, ed., *Federal Regulation and Chemical Innovation,* American Chemical Society Symposium Series, no. 109 (1979); "Effects of Regulations on Innovation Problems," *Chemical and Engineering News,* September 18, 1978, pp. 21–22; J. C. Ivestine, *The Impact of Environmental Protection Regulation on Research and Development in the International Chemical Industry* (Washington, D.C.: NSF, May 1978); James P. Meagher, "Another Man's Poison," *Barrons,* September 5, 1977, pp. 11–13; Glenn E. Schweitzer, "Regulation and Innovation: Short-Term Adjustments and Long-Term Impacts," Program on Science, Technology, and Society, Cornell University, September 1, 1978.

[7]For the views of the small chemical company, see Elmer Fike, "The Small Company and TSCA," *Toxic Substances Journal,* 2 no. 1 (Summer 1980), pp. 103–11.

[8]For an excellent review of the current state of the pesticide industry, see Theodore Eichers, "The Farm Pesticide Industry," United States Department of Agriculture, Agriculture Economic Report no. 461 (September 1980). See also J. D. Riggleman, "Perspective on Costs of Regulation" (Presidential Address at the 33d Annual Meeting of the Northeastern Weed Science Society, Boston, January 3, 1979), and Dale J. Menkhaus, "The Effects of Environmental Legislation on the Structure of the Pesticide Industry: A Simulation Study" (Ph.D. diss., Purdue University, December 1973). The literature on the impact of regulation on drug innovation is extensive, and only a portion of it is cited here. Much of the work has been done by associates of the American Enterprise Institute, an organization with a long-standing interest in documenting the impact of regulation on the performance of the American economy. See, particularly, Martin Bailey, "Research and Development Costs and Returns: The United States Pharmaceutical Industry," *Journal of Political Economy,* 80 (January–February 1971), 70–85; Joseph Cooper, *Regulation, Economics, and Pharmaceutical Innovation* (Washington, D.C.: American University, 1976); Henry G. Grabowski, *Drug Regulation and Innovation* (Washington, D.C.: American Enterprise Institute, 1976); R. Helms, ed., *Drug Development and Marketing* (Washington, D.C.: American Enterprise Institute, 1975) especially articles by Clymer and Lasagna and Wardell; David Schwartzman, *Innovation in the Pharmaceutical Industry* (Baltimore: Johns Hopkins University Press, 1976); Sam Peltzman, *Regulation of Pharmaceutical Innovation* (Washington, D.C.: American Enterprise Institute, 1975); UN Centre on Transnational Corporation, *Transnational Corporations and the Pharmaceutical Industry* (New York: United Nations, 1979). These studies focus on the costs of regulation. For a critique and an accounting of the

introducing new substances has risen sharply and the number of new products marketed has dropped significantly.[9] By the 1970s, innovation had become the domain of large firms, which focused principally on big payoff products: pesticides for large-volume crops and drugs for widespread diseases.[10] Cross-national studies of pharmaceutical firms also indicate shifts in R & D strategies.[11] In growing numbers, American firms have taken research and development facilities to Europe, particularly Britain, where test requirements are less onerous and new products are more rapidly approved.[12] Those who dispute the claims of chemical leaders point to the "maturity" of both industries rather than to regulatory effects to account for the decline in innovation.[13] Even so, the evidence points to a greater slowdown in the introduction of new products in the United States than in Europe.[14]

benefits of regulation, see James Jondrow, "A Measure of the Monetary Benefits and Costs to Consumers of the Regulation of Prescription Drug Effectiveness" (Ph.D. diss., University of Wisconsin, 1972), and Thomas McGuire, Richard Nelson, and Thomas Spavins, "An Evaluation of Consumer Protection Legislation: The 1962 Drug Amendments—A Comment," *Journal of Political Economy,* 83 (May–June 1975), 655–62.

[9]For a number of reasons, most of which the industry would like to tie to regulation, the cost of marketing new pesticide products has been growing rapidly. The costs of developing one new crop protectant in the United States increased from $195 million in 1956 to $915 million in 1970 (Riggleman, op. cit.). Between 1967–1970 and 1977–78, research and development costs in the industry as a whole increased 400 percent, while the number of new products registered dropped from ten to two per annum. The number of new chemicals screened annually in 1967–1970 was 6,500, compared to 84,000 in 1977–78. The average time it took to get a product registered from this initial screening increased from 68 months in 1967–70 to 110 months in 1977–78. Sixty-five percent of expenditures for research and development in 1977 went for developing new products; 35 percent went for protecting and expanding existing registrations (Eichers, op. cit.). Students of the drug industry have traced the impact of the 1962 amendments to the Food, Drug, and Cosmetics Act which specified that marketed drugs must be shown not only to be safe but also to be effective. By the early 1970s, Peltzman argued that the costs of marketing a new drug had doubled and that the number of new drugs marketed had been reduced by one-half. See *The Regulation of Pharmaceutical Innovation: The 1962 Amendments* (Washington, D.C.: American Enterprise Institute, 1974). Schwartzman showed that the time required to get FDA marketing approval had reduced the effective patent life of a new drug from 13.9 years (between 1966 and 1969) to 12.4 years (between 1970 and 1973) (Schwartzman, op. cit., p. 180).

[10]For pesticides, see Eichers, op. cit., pp. 21–22, and Menkhaus, op. cit. For drugs, see Henry Grabowski and John Vernon, "Structural Effects of Regulation in the Drug Industry," in Robert Masson, ed., *Essays on Industrial Organization in Honor of Joe Bain* (Cambridge, Mass.: Ballinger, 1976); Lewis H. Sarett, "FDA Regulations and Their Influence on Future R and D," *Research Management,* 17, no. 2 (March 1974), 18–20; and Peltzman, op. cit.

[11]Grabowski and Vernon, op. cit.

[12]Louis Lasagna and William M. Wardell, "The Rate of New Drug Discovery," in Helms, op. cit., pp. 155–64; David Schwartzman, *The Expected Return from Pharmaceutical Research* (Washington, D.C.: American Enterprise Institute, 1975); UN, *Transnational Corporations and the Pharmaceutical Industry* (New York: UN, 1979); and Harold Clymer, "The Economic and Regulatory Climate: U.S. and Overseas Trends," in Helms, op. cit.

[13]UN, op. cit., pp. 6–7.

[14]See Henry Grabowski, John M. Vernon, and Lacy G. Thomas, "The Effects of Regula-

The need for governmental authorities to review company test data raises delicate problems of confidentiality, or the protection of trade secrets. Seemingly unimportant data in the hands of regulators may provide important assistance to knowledgeable competitors. An inability to protect confidentiality rapidly diminishes the returns from innovation. In part, problems of confidentiality can be remedied by limiting testing requirements and the kinds of data that are passed along to governmental authorities. But by and large the means of protecting trade secrets depend on the relationships between regulator and regulated. Where strong trust prevails, informal assurances may be sufficient. Where suspicion exists, industry will seek formal procedures to routinize the handling of confidential information. Despite company concerns, the experiences of drug and pesticide regulation suggest that problems of confidentiality can be worked out to industry's satisfaction.

A fourth problem derives from the international character of chemical production and marketing and the fact that differences in regulations can raise important nontariff barriers to trade and investment.[15] Nonuniform testing protocols complicate the procedures firms must follow before placing their products in different markets. Stringent use restrictions exclude some products altogether, and varying rules on exposure levels in the workplace may necessitate the design of different manufacturing processes for foreign plants.

Some firms have responded to potential barriers to trade and investment by pushing for the harmonization of divergent national policies, coordinating their efforts through international trade associations, and pressing for consensus in the EC, the OECD, and various United Nations agencies. Others have lobbied their own governments to export national policy through the international harmonization process, that is, to protect and extend advantages that

tory Policy on the Incentives to Innovation: An International Comparative Analysis," in Samuel A. Mitchell and Emery A. Link, eds., *Impact of Public Policy on Drug Innovation and Pricing* (Washington, D.C.: American University, 1976), pp. 47–82, and Clymer, op. cit. In comparing the United States and Britain, Grabowski, Vernon, and Thomas conclude that research and development productivity dropped off precipitously in both countries in the 1960s compared to the 1950s, but while the drop was sixfold in the United States, it was only threefold in Britain. In a broader comparison, Clymer finds that research and development in the U.S. pharmaceutical industry is growing much more slowly than it is in other countries. EC funds now exceed those of the United States, and Japan spends 75 percent of the funds committed in the United States, although it has a much smaller domestic base. Worldwide introductions of new chemicals were down 28 percent between 1961 and 1973, but American introductions were down 53 percent. While the United States accounted for one-fifth of all new products in the 1950s, it accounted for only one-sixth of new products in the 1970s. The declining home position has also hurt American drug exports, which have declined by one-third since 1950 as a percentage of total exports.

[15]Ingo Walter, "Non-Tariff Barriers and the Control of Chemicals" (Paper prepared for OECD Environment Directorate, October 1979). See also, "Will Toxic Substances Laws Be Trade Barriers?" *Chemical Week,* March 7, 1979, pp. 39–40.

the industry enjoys at home. Still others have used harmonization to pressure their own national government to rid its domestic arrangements of provisions unfavorable to the industry.

Chemical firms are bothered by all four of these regulatory problems, although different industries frequently rank the effect of the four problems differently. As a result, industry energies are seldom focused on identical issues. Moreover, the efforts of firms to cope with one or two of these regulatory challenges may actually complicate their management of others. Exceptional success in limiting test requirements in a particular country, for example, may disrupt delicately laid plans for harmonization. Firms that are determined to facilitate harmonization may be willing to tolerate more stringent regulations at home in order to bring domestic rules in line with those of trading partners. Successful harmonization, which depends on effective channels of information exchange, may complicate problems of confidentiality.

Industry Responses

Confronted with generally similar regulatory problems, industries in the four countries have responded with widely varied strategies. Yet each industry has met with comparably satisfying results in moderating production costs, protecting the potential for innovation, assuring confidentiality, and achieving a significant measure of cross-national harmonization. British firms have cultivated a relationship with governmental regulators that emphasizes informal consultation and the development of reasonable, practical, and flexible regulations. Success with this approach at home has encouraged industry spokesmen to push for its extension abroad through international negotiations. The powerful German industry has developed a cooperative but formal relationship with German regulators, resulting in rules that are precisely formulated and inflexibly implemented. The Germans, too, have promoted adoption of their national approach abroad. French chemical firms have pursued a strategy of apparent acceptance and adaptation, accepting the role of the state as chemical regulator and concentrating on ways to adapt to that fact. By contrast, American industry has chosen a strategy of active resistance to all governmental efforts to regulate hazardous chemicals. Moreover, unlike the Germans and the British, American managers have used the process of harmonization to restrain rather than promote the approach preferred by regulators at home.

Differences in approach grow from deeply rooted traditions of government-industry relations unique to each country and from the industry's particular history, organization, and economic strength. But, most importantly, differences in strategy grow from the special features of each country's regulatory

system and the recognition by chemical firms that influence is maximized by exploiting every opportunity presented by the prevailing "rules of the game."

Britain

The chemical industry has had a long and successful history in Britain.[16] As the first modern chemical industry, it supplied inorganic chemicals to the British textile industry in the early stages of the industrial revolution. When German producers of organic dyes threatened its leadership role in the late nineteenth and early twentieth centuries, the British chemical industry utilized technological know-how and an active strategy of mergers to sustain itself when other early British industries could no longer keep pace. The most ambitious merger, in 1926, yielded Imperial Chemical Industries, a giant firm that soon came to dominate the sector in Britain.[17] ICI remains today a highly innovative, diversified, and truly international firm, accounting for 25 percent of all British chemical production. Several smaller but competitive firms (British Petroleum, Albright and Wilson, Courtaulds) complement the activities of ICI, contributing to what has been a most prosperous part of the British economy. Chemical firms have recorded steady growth in production, stable employment, trade surpluses, and healthy profit margins, enabling them to remain modern and innovative. Moreover, the discovery of North Sea oil in the early 1970s promised a bright future in petrochemicals. This unusual success has won the industry many friends in high places.

For these and other reasons, including the strategic importance of chemicals in time of war, relations between the government and the chemical industry have always been close. Ties have also been facilitated by the professionalism of the British civil service and the preference of public officials for personal and informal relations with private interests and groups.[18] Officers of leading firms, as well as representatives of the Chemical Industries Association, the industry's trade association, maintain close relations with officials at the Department of Trade and Industry, the Health and

[16]Literature on the history of the British chemical industry is extensive. See Archibald Clow and Nan L. Clow, *The Chemical Revolution: A Contribution to Social Technology* (London: Batchworth Press, 1952); D. W. F. Hardie, *A History of the Modern British Chemical Industry* (Oxford: Pergamon Press, 1966); and T. I. Williams, *The Chemical Industry* (London: Penguin Books, 1953).

[17]The best history of ICI is William J. Reader, *Imperial Chemical Industries: A History* (London: Oxford University Press, 1970).

[18]Much has been written about the strengths and weaknesses of the British civil service. See, for example, R. Brown and D. Steel, *The Administrative Process in Britain* (London: Methuen, 1979), and Henry Parris, *Constitutional Bureaucracy: The Development of British Central Administration since the Eighteenth Century* (London: George Allen and Unwin, 1969).

Safety Executive, and the Department of the Environment (DOE). Informality is the preferred way of conducting regulatory business in Britain; a legacy of trust and good feelings has permitted the tackling of tough policy problems in a spirit of accommodation rather than confrontation.

Since 1945, government-industry relations in Britain generally have been consistent with the pattern observed in chemicals. Starting with a tradition of economic liberalism that discouraged government intervention in economic affairs, the British have increasingly adopted a "mixed economy" model. Political leaders have experimented with the public ownership of selected industries and have evolved a unique approach to economic planning that is administered by the National Economic Development Office.[19] The continuing difficulties in British industrial performance gave considerable impetus to experimentation, particularly when similar planning efforts seemed to be promoting industrial revival and modernization in France.

Economic planning in Britain is of special interest both because it affected chemicals directly and because some instruments used in it were later incorporated into health and safety legislation. The approach, as contrasted with more direct state intervention in France and elsewhere, gave government the role of facilitator rather than director of economic activity.[20] It institutionalized a tripartite process of cooperation in which representatives of business, government, and labor meet and discuss common problems. Government's role is to improve the environment for making business decisions, not to make those decisions itself. Tripartite working parties were formed for several sectors of the chemical industry, and they have met regularly to discuss current problems and prospects.[21] Most agree that the work of these groups has been of limited assistance to industrial performance, but close personal relations encouraged by these meetings have made easier the task of toxic substances control.

While the planning exercise affirmed the British preference for informality

[19]There is an extensive literature on government-industry relations in Britain. See, for example, Andrew Shonfield, *Modern Capitalism: The Changing Balance of Public and Private Power* (New York: Oxford University Press, 1965), chap. 6; Stephen Blank, *Industry and Government in Britain: The Federation of British Industries in Politics, 1945–1965* (Lexington, Mass.: Lexington Books, 1973); Trevor Smith, "Great Britain," in Raymond Vernon, ed., *Big Business and the State* (Cambridge: Harvard University Press, 1974), pp. 87–104; and Stephen Young, *Intervention in the Mixed Economy: The Evolution of British Industrial Policy, 1964–1972* (London: Croon Helm, 1974).

[20]For discussions of British planning, see Shonfield, op. cit., chap. 6; E. E. Hagen and S. F. T. White, *Great Britain: Quiet Revolution in Planning* (Syracuse: Syracuse University Press, 1966); and Trevor Smith, "Britain," in Jack Hayward and Michael Watson, eds., *Politics, Planning, and Public Policy* (Cambridge: Cambridge University Press, 1975), pp. 111–27.

[21]Interviews at National Economic Development Office and Department of Industry, London, January and June 1980.

and flexibility in addressing policy problems, this form of public-sector/private-sector accommodation had already been tested in the regulatory arena with the adoption in 1957 of the Pesticide Safety Precaution Scheme to assure the safety of new pest control products. The PSPS prescribes ongoing discussions between industry and government prior to the marketing of any new pesticides; the discussions culminate not in registration or legal approval but in an informal agreement specifying whether and under what conditions the product may be manufactured and used. While the scheme is voluntary and operates without statutory authority, industry has been a willing and cooperative participant. Individual firms might have entertained thoughts of acting otherwise, but the industry trade association, the British Agrochemical Association (BAA), has pressed for conformity.

In Britain, regulation by informal cooperation benefits industry in several ways. Because participation is limited to representatives of "legitimate" interests, company spokesmen are assured significant input. Industry's influence in informal discussions is further strengthened by the technical character of many regulatory issues and the industry's knowledge of such issues in contrast to the limited expertise held by labor or environmental groups.[22] Technical know-how also makes it easier for industry representatives to communicate with the various expert advisory committees that exert considerable influence over regulatory outcomes.

Industry also benefits from a process that allows accommodation and agreement to be reached out of public view. Confidential negotiations are likely to permit greater industry control over the information and documentation that is introduced, and they also discourage the public posturing that frequently hardens interest group positions and prevents acceptable compromise.

Finally, industry benefits from British regulators' preference for pragmatism and flexibility in addressing chemical hazards. This approach calls for chemicals to be assessed and controlled substance by substance rather than generically, and for test requirements to be tailored to the needs of particular chemicals, thereby minimizing unnecessary and costly testing.[23] Pragmatism also generally argues against outright bans or drastic reductions in usage and in favor of reducing production incrementally and imposing restrictions gradually.

Concepts like "reasonable" and "practicable" sum up British regulatory

[22]Interviews at ICI, London, June 1980; the Confederation of British Industry, London, June 1980; and HSE, London, January and June 1980.

[23]The advantages of flexibility were cited repeatedly by spokesmen for both government and industry. Interviews at HSE, the Department of Environment, ICI, and the CIA, London, June 1980.

philosophy, a philosophy generally shared by industry. Britain's historic emphasis on voluntary compliance rather than legal enforcement permits industry to meet the burdens of regulation by entertaining more options.[24] As one industry spokesman put it, if British chemicals must abide some form of governmental intervention for regulatory purposes, they could hardly design something superior to the existing approach.[25]

Two developments, however, threaten to alter the British process in ways that would be detrimental to industrial interests. First, international discussions aimed at the harmonization of national policies have underscored the fact that the informality and flexibility of the British approach is increasingly out of step with policies adopted elsewhere. In the words of one individual at CIA, the British have been "swimming upstream" for flexibility, even though it is "the sensible way versus the Code Napoléon."[26] While British industry is not opposed to harmonization—indeed, British manufacturers are as worried about barriers to trade as anyone—it is concerned that harmonization could bring additional regulatory burdens. In negotiations for a European-wide premarket notification scheme, British officials and industry spokesmen repeatedly found themselves outnumbered, battling for a flexible approach to hazard assessment against those who advocated a checklist of test requirements.

The second challenge has come from several British labor unions that have broken with the tripartite bargaining process and have taken their cases concerning specific health hazards to the public and the press. A case in point is the effort by NUAAW, the agricultural farm workers' union, to ban 2,4,5-T (see chapter 8). The union's highly public and emotional campaign drew a heated response from industry, represented primarily by BAA, which characterized the debate as a conflict between objective scientific assessment and decision making by the media.[27] A reexamination of the issue by ACP reaffirmed the governmental position, but industry spokesmen were not optimistic about the prospects for a return to more limited public debate in the future. The challenge brought by ASTMS and GMWU on the issue of occupational carcinogens (discussed in chapter 8) is an even more politically charged issue because of the range of scientific uncertainties invoked and the number of chemicals under scrutiny. In time, the airing of scientific debates may erode public confidence in existing arrangements, and the formal and public requirements of international harmonization may undermine mutual trust between industry and government.

[24]Interview at ICI, London, June 1980.
[25]Interview at the CIA, London, June 1980.
[26]Interview at the CIA, London, June 1980.
[27]Interview at BAA, London, June 1980.

West Germany

The Germans, like the British, have enjoyed a long history of industrial leadership and commercial success in chemicals. Prominence was first achieved in the late nineteenth century on the strength of academic knowledge of organic chemistry and an industrial ability to synthesize and market organic dyes for use in the textile industry.[28] By 1900, German dyestuffs accounted for 80 to 90 percent of world production. Rationalization and merger in the 1920s resulted in the creation of I. G. Farben, the chemical giant that dominated the industry in the interwar years and whose services to the Third Reich during World War II are well known.[29] In an effort to rid Germany of any undue concentration of power, the Allies divided I. G. Farben into four separate companies: BASF (Badische), Bayer, Hoechst, and Hulls. Nevertheless, BASF, Bayer, and Hoechst still account for about 80 percent of German chemical production. The Germans have also regained their position as a leading exporter of chemicals and rank only behind the United States and Japan among OECD countries in total chemical production. The "Big Three" German firms rank among the largest in the world and are the prototype of today's chemical giants: broadly diversified, highly innovative, and fully internationalized. Chemicals are one of a small group of industries that share much of the credit for German postwar economic successes. Substantial investments in research and development (4 to 5 percent of sales) have resulted in a steady stream of new products, keeping these firms competitive at home and facilitating their penetration of new markets abroad.

As in Britain, the general character of government-industry relations in Germany offers a good starting point for explaining regulatory strategy. The German state has long been in the business of industrial development—its involvement reached a peak during the interwar years—but the close and trusting relationship between civil servants and industrialists that evolved in Britain never developed in Germany.[30] In the years of reconstruction after World War II, greater distance between government and industry was encouraged by Allied, and particularly American, occupiers, a pattern elaborated in the concept of a "social market" economy (soziale Marktwirtschaft).[31] According to this view, government undertook numerous social obligations but left economic processes primarily to marketplace forces. In operation, the "social market" economy has required regular discussion between industry and government, since social programs and economic developments are closely related, but communication has remained at arm's length, assuming a more formal and structured character than the dialogue in Britain. The successful recovery of the German economy and continuing prosperity in the 1960s and 1970s provided little impetus to experiment with economic planning.

[28] See the chapters on Germany in L. F. Haber, *The Chemical Industry in the Nineteenth Century* (Oxford: Oxford University Press, 1955).

[29] Joseph Borkin, *The Crime and Punishment of I. G. Farben* (New York: Free Press, 1978).

[30] Industry-state relations in Germany have generated considerable interest since the 1930s. See, for example, Alexander Gerschenkron, *Bread and Democracy in Germany* (New York: Fertig, 1966); Karl Hardach, *The Political Economy of Germany in the Twentieth Century* (Berkeley and Los Angeles: University of California Press, 1980); Henry Wallich, *Mainsprings of the German Revival* (New Haven: Yale University Press, 1955); George Kuster, "Germany," in Vernon, op. cit.; Michael Kreile, "West Germany: The Dynamics of Expansion," in Peter J. Katzenstein, ed., *Between Power and Plenty: Foreign Economic Policies of Advanced Industrialized States* (Madison: University of Wisconsin Press, 1978), pp. 191–224.

In the formulation of a national environmental policy in the early 1970s, the Germans raised this practice of formal discussion and consultation to the status of an organizing principle (Kooperationsprinzip), and regular cooperation among specified interest groups is a requirement for the development of toxic substance regulations. While both the Germans and the British stress cooperation between affected parties and the government, the formal distance implied in German regulatory procedures results in somewhat different behavior by German firms.

As their first line of defense, German industrialists argued that intervention in chemicals was simply unnecessary.[32] Managers pointed to thirty years of self-regulation, during which new products were carefully screened and workers were protected from chemical hazards. The preference for self-regulation also grew from the knowledge that, once involved, German officials tended to demand "legislative perfectionism" (Gesetzgebungsperfektionismus).[33] Unlike their British counterparts, renowned for their flexibility and pragmatism, German regulators have acquired a reputation for statutory precision and faithful execution of regulatory requirements. The powerful German Chemical Industry Association (Verband der Chemischen Industrie, VCI) criticizes German environmental laws as the strictest in the world precisely because regulators are so conscientious in their implementation.[34]

In the mid-1970s, when it became obvious that self-regulation was no

[31] For an interesting discussion of the evolution of the social market economy, see Edwin Hartrich, *The Fourth and Richest Reich: How the Germans Conquered the Postwar World* (New York: Macmillan, 1980).

[32] Virtually all industry statements begin with this assumption. For example, see Bundesverband der Deutschen Industrie (BDI), *Jahresbericht, 1979–1980* (Cologne: BDI, 1980), pp. 153–60; BDI, *Umweltschutz und Industrielle Entwicklung in der Bundesrepublik Deutschland* (Cologne: BDI, 1980); and VCI, *Jahresbericht, 1978–1979* (Frankfurt: VCI, 1979), pp. 47–62.

[33] VCI, op. cit., pp. 8–9.

[34] Ibid.

longer a viable strategy regarding the broad range of industrial chemicals, industry adopted new tactics. The passage of premarket notification legislation in the United States and France ensured a German legislative response.[35] However, German firms preferred intervention of a very different sort from that favored by British industry. Where the latter pressed for broad enabling legislation and flexible implementation, German chemical manufacturers were more comfortable with detailed and precisely worded legislation that spelled out industry's obligations clearly and limited the discretion of German bureaucrats.[36] In negotiations leading to the passage of the German Chemicals Act in 1980, for example, industry argued for the so-called *Stufenplan* (step-sequence plan), which linked testing to production quantities and permitted firms to predict accurately the costs of testing.[37] Chemical leaders also battled hard for the exclusion of existing substances from notification and testing requirements, fearful that zealous bureaucrats would quickly demand unreasonably costly testing programs.

At odds with the predictability preferred by German industry is the uncertainty that is inherent in chemical risk assessment. As British firms are fond of pointing out, neither a standard set of tests nor the tying of test requirements to production levels makes sense scientifically. Test standardization ensures that many unnecessary tests will be performed and increases the likelihood that others, critical for assessing a product's safety, will be avoided. Not surprisingly, the draft legislation, reflecting the industry's point of view, drew precisely this criticism from German scientists.

German chemical leaders are probably more concerned about regulation's impact on innovation than any of their European competitors.[38] Of special concern is the expected negative impact on highly innovative sectors of the industry, such as organic dyestuffs, which produce new products in small volume. It is argued that the anticipated regulatory costs have already had an impact on German dyestuffs by giving rise to new industries in East Asia, where regulations are less stringent. Clearly, the burdens of regulation fall more heavily on small than large firms, and small firms are an important source of innovation in high value-added specialty chemicals, a range of products that is increasingly crucial to the continuing competitiveness of the German industry.[39]

[35] Interview at Hoechst, Frankfurt, June 1980.

[36] See Klaus Weissermel, "Die Kontinuitat der Chemischen Forschung Sichern," *Chemie Fortschritt* (March 1979).

[37] Interviews at Hoechst, BASF, VCI, Frankfurt, and Ludwigshafen, June 1980.

[38] Interviews at VCI, Hoechst, BASF, Frankfurt, and Ludwigshafen, June 1980. We did learn of one empirical study under contract from the Umweltbundesamt on the likely impact of the German Chemicals Act on innovation in the chemical industry. It is being conducted by Professor Schulze, a chemical engineer at the Technical University of Berlin.

[39] Chemical testing by industry in Germany is conducted almost exclusively in-house by the largest chemical firms. To date, there are no laboratories jointly financed by a number of chemical firms such as the Chemical Industry Institute of Toxicology in the United States, nor is there a network of independent facilities where smaller firms could go to have tests conducted for them. At the European level, forty firms have sponsored the formation of ECETOC, a cooperative venture that can provide scientific information for member firms. Participation thus far has been limited primarily to large firms.

Of greatest concern to German firms, however, is the proliferation of incompatible chemical control schemes abroad and the barriers these may create for international trade. With more than 50 percent of their foreign sales going to EC countries and another 10 percent to the United States, German firms have worked hard for cross-national harmonization. On the issue of premarket notification, German industry leaders sought European agreement in the negotiation of the EC's Sixth Amendment prior to the passage of national legislation. This strategy not only gave German officials greater flexibility in international negotiations, which increased the chances for agreement, but also served to contain the debate over the national law in ways that were compatible with industry interests. Harmonization serves as a means not only to export the German regulatory approach to others, but also to limit what overzealous German bureaucrats might try to impose at home. The "Big Three" have coordinated their international efforts through VCI. Knowledgeable representatives of the association work closely with the German national delegations to the EC, OECD, and other international institutions.[40] VCI leadership was also behind the early growth and development of CEFIC, the European-wide chemical trade association that coordinates chemical industry interests vis-à-vis the EC on a broad spectrum of issues.[41]

In the end, the German industry's response to governmental intervention for chemical control derives principally from the highly legalistic political culture in which it must operate. In stark contrast with their British competitors, German firms can only feel confident that their interests are protected if the rights and duties of public officials and private actors are formally elaborated in law. Yet, the arm's-length relationship between industrialist and bureaucrat has proved a cooperative one because both share a deep concern for the economic future of chemical production and chemical exports in Germany and both recognize the need to define a reasonable accommodation regarding the regulatory burden.

France

The chemical industry in France has charted a course different from those followed in Britain and Germany.[42] Through most of the twentieth century, the

[40] Interviews at VCI and Hoechst, Frankfurt, June 1980, and CEFIC, Brussels, January and June 1980.

[41] Interviews at CEFIC, Brussels, January and June 1980.

[42] For a good brief review of French chemical development, see Jean-Claude Achille, "A

French have preferred to be self-sufficient rather than internationally competitive in chemicals, forgoing the rationalizations and mergers following World War I that produced internationally competitive firms elsewhere and concentrating instead on servicing the domestic market. As a result, French chemicals entered the 1960s with an abundance of small and inefficient family-owned firms that were locked together by a complicated network of joint ventures which had been forged to give the industry some of the benefits of scale.

It took the formation of the European Community and exposure to foreign competition in the late 1950s to crack the wall of protectionism and to begin the painful process of restructuring and rationalization. The first objective was to build several internationally competitive firms through consolidation and merger. Rhône-Poulenc and Péchiney Ugine Kuhlman (PUK) were the beneficiaries of state-encouraged mergers in the private sector. ATO-Chimie, CdF-Chimie, and Entreprise Minière et Chimique (EMC) were the products of merger in the public sector. By 1977, these five firms accounted for 33 percent of French chemical production. Second, the state and the firms together sought to disentangle the complicated and largely inefficient joint ventures and to devise market-sharing schemes to prevent unnecessary competition. This rationalization was largely complete by the late 1970s.[43]

The French government also sought to boost the fortunes of the industry by expanding productive capacity, but its efforts were dealt a serious blow in the early 1970s, when feedstock prices soared and the subsequent recession left much of the new capacity standing idle. A rationalization scheme that had built scale but not depth and diversity left some large firms particularly exposed. The socialist government's decision in the early 1980s to nationalize the remaining large chemical firms and to embark on an even more ambitious restructuring is but the most recent example of a growing governmental presence in the industry.[44]

All of French industry has grown accustomed to state intervention.[45] In the

Survey of the French Chemical Industry," *Chemistry and Industry,* November 18, 1978, pp. 855–60. For a more comprehensive history, see John G. Smith, *The Origins and Early Development of the Heavy Chemical Industry in France* (New York: Clarendon Press, 1979).

[43] For a more thorough discussion of this rationalization legacy, see Ilgen, "Better Living," pp. 662–66.

[44] See "French Chemical Industry Completes Massive Restructuring," *Chemical and Engineering News,* April 2, 1984, pp. 22–25.

[45] On the importance of French administration, see Ezra N. Suleiman, *Politics, Power, and Bureaucracy in France: The Administrative Elite* (Princeton: Princeton University Press, 1974), and Michel Crozier, *The Bureaucratic Phenomenon* (Chicago: University of Chicago Press, 1967). On French industry, see Henry Ehrman, *Organized Business in France* (Princeton: Princeton University Press, 1957).

first decades of industrialization, the state played a paternal role, protecting family-owned firms from their more competitive foreign rivals with quotas and high tariffs. To meet foreign competition in the liberal international economy after World War II, the French embraced the idea of a national economic plan and established a large planning bureaucracy to devise five-year blueprints for modernization.[46]

Industry's response to intervention has varied according to the government's plans for the moment. Individual family-owned firms benefited enormously from the early protection they received, even if the long-term effects were harmful to French industry in international competition. Postwar rationalization benefited some firms and was ruinous to others. Even when mergers promised to expand the size of their firms, some company officials resisted the burdens of unprofitable or declining subsidiaries.

Regardless of how individual interests are affected, it is undeniable that the state is a formidable presence in the French economy, one that industries must learn to accommodate if they hope to prosper. The question in France has never been whether the state has a legitimate role to play in industry affairs, a question that is vigorously debated in the United States, but, rather, how to react to the state's role to gain best advantage. Industry regularly reacts to governmental plans and directions rather than designing plans of its own. Initiative is presumed to rest with the state.

Not unexpectedly, this pattern of state-industry relations colors the French government's approach to chemical control. In this light, regulation has been much more an intragovernmental matter than the negotiated arrangement between the state and the private sector typically found in Britain and West Germany. For example, the French state acted in considerable autonomy in developing both the 1977 Act on the Control of Chemical Products and the 1976 Prevention of Accidents in the Workplace Act. What little discussion did take place between industry and government in the drafting of these laws only confirms the government's control over the proceedings. Chemical leaders were given little personal access to governmental deliberations and were represented indirectly and not very successfully by the Ministry of Industry,

[46] On the changing role of the state in the economy in the postwar period, see Charles-Albert Michalet, "France," in Vernon, op. cit., pp. 105–25, and John Sheahan, *Promotion and Control of Industry in France* (Berkeley and Los Angeles: University of California Press, 1977). There is an abundance of literature on the experience of French planning. See, for example, Stephen Cohen, *Modern Capitalist Planning* (Cambridge: Harvard University Press, 1969); Jean-Jacques Bonnaud, "Planning and Industry in France," in Hayward and Watson, op. cit., pp. 93–110; John H. McArthur and Bruce R. Scott, *Industrial Planning in France* (Boston: Harvard University, Division of Research, Graduate School of Business Administration, 1969); and Yves Ullmo, "France: The National Context," in Hayward and Watson, op. cit., pp. 22–51.

the sector's principal spokesman within the bureaucracy. Unlike the German VCI, the French Chemical Industry Association (Union des Industries Chimiques, UIC), a weak federation of sixty-five smaller associations, played but a small role in the regulatory debate.

French bureaucrats regularly maintain a measure of aloofness from both public interest groups and industry, calling on the latter only when they are in need of technical information. Chimie et Ecologie, a consulting group of industrialists and scientists organized by UIC to provide technical expertise to the Ministry of the Environment, has been unable to develop an effective working relationship with government officials.[47] Indeed, in deliberations leading to the passage of the Chemical Law, one member claimed that the government never even revealed a draft text of the proposed statute during all of the informal meetings.[48] Or, as summed up by one UIC official, "[these discussions] went quite well when there were no disagreements," otherwise, "they didn't listen to us."[49] When discussions with government did take place, they were almost always about technical matters and seldom about the shape and conduct of policy.[50]

The chemical industry's relations with the ministries charged with regulatory duties raised special difficulties. Relations with the Ministry of the Environment had never been close, and those with the Ministry of Labor posed even greater problems, staffed as it is by work inspectors and physicians who are sympathetic to the objectives of worker protection. Bureaucratic rivalry between the two ministries further complicated the defense of industry interests. One consequence of this rivalry has been that French firms must now submit two separate notification files for new chemical substances. The UIC has had only limited success in coordinating these separate submissions.

If we assess the influence of French chemical manufacturers by the standards applied in the other three countries, we might conclude that they have had little success in defining the contours of regulatory policy. Yet, industry spokesmen remain relatively unconcerned about the threats posed by regulation. Rising costs, a lower rate of innovation, and the loss of trade secrets are sometimes raised by company officials, but these topics are seldom given the urgency they receive, for example, in the United States. Less reliant on exports than either the British or the Germans, French firms have also been less concerned about international harmonization.

The greatest concern about regulation's impact on industry is voiced not by

[47] Interview at Colgate-Palmolive, Paris, June 1980.
[48] Ibid.
[49] Interview at UIC, Paris, June 1980.
[50] Interview at Rhone-Poulenc, Paris, June 1980.

industrial managers but by bureaucrats charged with overseeing the industry's economic fortunes. Officials at the Ministry of Industry argue that chemicals have not received the governmental attention accorded to other sectors and that this has permitted regulation to gain momentum. They maintain that risks are overstated and that regulatory actions are taken simply to appease public opinion.[51] The ministry has also pressed the industry position that France should forgo unilateral action and wait for harmonization within the EC and OECD.[52]

Two explanations can be advanced for the complacency on the part of French industry. The first focuses less on industry's involvement in the formulation of policy and more on the government's record of implementing and enforcing it. In contrast to the situation in Germany, where industry knows that bureaucrats will meticulously adhere to every letter of the law and is insistent that its obligations be specified in advance, industrial leadership in France is more comfortable with broad and comprehensive legislation. They can countenance bureaucrats demonstrating their vigilance in health and environmental matters to the public, secure in the knowledge that implementation will fully consider the impact on industry.

Firms may also anticipate weak enforcement, permitting them to deflect the burdens of regulation by simply ignoring them. Early and fragmentary evidence regarding new chemical notifications under the 1977 chemicals law suggests a pattern of enforcement problems and poor compliance. In place of the anticipated fifty to one hundred notifications, government officials received approximately ten notices in the first year of operation. While several factors may account for this low response, it is clear that French bureaucrats seemed reluctant to hold companies strictly accountable, particularly at a time when other Western governments had not yet put similar schemes in place.

A second and more compelling explanation of industry's passive stance relates to the legacy of state involvement in the economy. French firms are resigned to the presence of government in a wide range of activities and have learned to accommodate that presence more easily and without the fanfare that has accompanied state intervention elsewhere. The best strategy is to accept the new state role and to work quietly to adapt to it. This adaptation is easier in the implementation stage and is facilitated by the state's dual role as regulator and economic manager. For the government to succeed as entrepreneur and economic modernizer, regulatory burdens must remain within reason. The fusion of economic and regulatory roles in the French government is

[51] Interviews at the Ministry of Industry, Paris, June 1980.
[52] Ibid.

the chemical industry's best guarantee of moderate regulatory requirements and absolves it of the need for the vigilant persuasion and possible confrontation that are the hallmarks of industrial regulatory behavior elsewhere.

From one perspective, the chemical industry has had little impact on regulatory policy in France; it is more a consumer than a molder of state action. But French industry is not a typical interest group, separate from the French state, in the way industry is in the United States or Britain. Instead, the state itself is a critical part of the chemical sector, and its policy is unavoidably conditioned by industrial perspectives. Taking advantage of this identity of views, French chemical firms have been able to contain regulatory momentum with a minimum of effort.

The United States

The American chemical industry started slowly in the late nineteenth century, and a good part of the twentieth century has been spent catching up.[53] Supply shortages during both world wars provided the incentive for building a viable and independent industry. The cutoff of German dyestuffs during World War I brought federal assistance, followed by congressional tariff protection. The shortfall of natural rubber during World War II resulted in governmental support for development of a synthetic substitute, which in turn laid the foundation for a flourishing postwar petrochemical industry. While the American industry too went through phases of merger and concentration, the enormous domestic market has always allowed competition among a much larger number of fully diversified firms than in any European country. In 1980 thirty-six American firms had chemical sales in excess of $1 billion, compared to fifteen for all of Europe (three in Germany, two in Britain, and two in France). The number of large firms grew in the 1960s and 1970s, when the major oil companies moved extensively into chemicals. While most of the larger firms have expanded abroad, the domestic market has remained their primary focus. Foreign trade and production make up a much smaller part of overall revenues for U.S. companies than for German or British firms. As a result, American chemical leaders have been more concerned about the national, rather than the international, implications of chemical control.

The postwar success of the chemical industry has also failed to attract the

[53]The most extensive American industrial history is the six-volume study by William Haynes, *American Chemical Industry* (New York: D. Van Nostrand, 1954). For a concise history, see John F. Henahan, "Two Hundred Years of American Chemicals," *Chemical Week*, February 18, 1976, pp. 25–60. There are also a number of good company histories of DuPont, Dow, and Monsanto.

same political attention that it has in Britain and Germany. In a large and diversified economy, the sector has been one success story among many. In the 1950s and the 1960s, Washington trusted industry to manage its own affairs, a decision reinforced by a legacy of remarkable growth and expansion.

Portions of the industry got a strong foretaste of governmental involvement with the passage of food additive legislation in the late 1950s, the establishment of a registration scheme for pesticides, and the regulation of drugs in the early 1960s. However, it was not until the 1970s that the industry as a whole began to feel the full weight of intervention. In contrast to the view taken by European firms, regulation was viewed by U.S. companies as their chief challenge in the 1970s.[54] Large companies have reorganized to create a new "counterbureaucracy" to collect the necessary data and to prepare the obligatory paperwork.[55] Testing facilities have undergone rapid expansion, most notably when 40 big companies jointly created the Chemical Industry Institute of Toxicology (CIIT) to test large volume chemicals.[56] Considerable resources have been devoted to lobbying and litigation, to underwriting the activities of a myriad of trade associations and to building formidable legal departments.[57]

[54]The chemical industry, citing Department of Commerce data, claims to spend more for pollution control than any other U.S. industry ($2.5 billion in 1979, 22 percent of the $11.1 billion spent by industry as a whole). See "Industry Spending on Pollution Control," *Chemecology*, May 1981. Dow Chemical calculates what it regards as the appropriate and the excessive regulatory costs it pays out each year. Total costs increased from $147 million in 1975 to $186 million in 1976 to $268 millioin in 1977, a jump of 82 percent in two years. Excessive costs increased from $50 million in 1975 to $60 million in 1976 to $115 million in 1977. Such figures lead Paul Oreffice of Dow to conclude, "Clearly there are no faster rising costs of business than expenses related to governmental regulations."

[55]One example is the organizational impact on Allied Chemical Company following the Kepone incident. See *New York Times*, January 16, 1980, p. D1. Monsanto and Shell Chemical have also reorganized extensively to address regulatory concerns. The Monsanto response was triggered by the unexpected ban of its acrylonitrile bottle, jointly developed at considerable expense with Coca Cola. Public relations were developed in an attempt to upgrade the industry's image. Monsanto President John Hanley has made a concerted effort to speak out on regulatory issues, and Monsanto has mounted a major public relations campaign to spread the word about Monsanto's activities in this area. CMA has also launched a major media program to upgrade the image of chemicals. The chemical industry occupies a status in the mind of the public similar to that of tobacco companies. See "Cleansing the Chemical Image," *Business Week*, October 8, 1979, p. 73; and "Adversaries or Allies? American Attitudes on Business, Government, and Growth," a survey conducted by Cambridge Reports, Inc., for Union Carbide Corporation, New York, 1980.

[56]For a discussion of CIIT, see "Chemical Firms Try Joint Product Testing," *Industry Week*, February 3, 1975, pp. 22–23. For a broader discussion of the industry's efforts to expand its toxicological facilities, see "Industry's Preemptive Strike against Cancer," *Fortune*, February 13, 1978.

[57]For a discussion of the growth of company offices in Washington and their lobbying

Industry's vigorous and negative response to the expansion of regulation must be viewed beside the broader legacy of public-sector/private-sector relations in the United States. Nowhere have the classical liberal views about the efficacy of a free-market economy and the need to maintain a separation between the public sector and the private sector penetrated so deeply.[58] Early efforts to regulate were not motivated by a desire to introduce new principles of economic organization but, rather, to correct perceived failures in the functioning of the market. The government was to be an arbiter among market forces, not a director of economic activity. Even so, its intrusion has always been controversial—actively debated in advance and then roundly criticized in the event of failure. In an important sense, the role of the state in the economy has never been as fully accepted in the United States as it has been in Europe. Debate over this role is frequently reopened, seldom generating more than a fragile consensus of the sort that is easily undone by a new political climate. Even within industry, views about the proper role of government vary widely. Firms in sectors such as transportation and communications have gained important advantages from particular regulatory arrangements, while most pharmaceutical and pesticide firms have struggled with regulatory burdens.

More recent attacks on a variety of social programs and on the wave of "social" regulation continue to raise fundamental questions about state intervention in the economy across the political spectrum. The American inability to resolve this question once and for all stems from a basic distrust of government accompanied by a fundamental belief that a market system, while not perfect, is the preferable means to meet the needs and desires of free citizens.[59] The shortcomings of the marketplace inevitably bring government into the economy, but government cannot be trusted to do the job right, for reasons of both incompetence and political opportunism. Continuing failures of the market will strengthen the case for expanded governmental activity at times; perceived failures of government encourage a return to the market-

efforts, see "Chemical Firms in Washington: Getting Their Point Across," *Chemical and Engineering News,* December 20, 1976, pp. 17–18; and "More Firms Set Up Government Relations Unit," *Chemical and Engineering News,* July 2, 1979, p. 18. For a discussion of chemical trade associations, see "Trade Groups: Voice for Industry in Washington," *Chemical and Engineering News,* December 20, 1976, pp. 12–13. With the growing presence of large oil firms in the chemical sector, the American Petroleum Institute (API) increasingly lends its influence to battles over chemical regulation. It was API that brought suit against OSHA in the benzene case.

[58] See Louis Hartz, *The Liberal Tradition in America* (New York: Harcourt Brace, 1955).

[59] John G. Ruggie, "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order," *International Organization,* 36 (Spring, 1982), 379–415.

place. In Europe, where faith in the market is less pervasive, and faith in and protection by the state are more pronounced, a public-sector/private-sector accommodation is more easily achieved.

The American regulatory process for chemical control, discussed in earlier chapters, reflects this ambivalence about government and the marketplace. The recognition that the market has inadequately protected the public against significant chemical hazards has opened the door to governmental intervention. The concern that government will prove incapable of regulating efficiently or will be co-opted by special interests has in turn resulted in a process structured to give broad industry opportunities for participation in the formulation, implementation, and litigation of policy. It is a process designed to bring marketplace dynamics to the political arena. Interested parties must be willing to invest considerable time and energy to see their interests protected. Moreover, the investment is often unending, since issues are seldom put to rest but are, rather, reassessed in new political environments. The very length of the regulatory debate often advantages industry, endowed as it often is with superior organization and extensive resources.

The changing character of the state-industry relationship and a regulatory process that is structured to play to short-term political forces make the government's role as regulator most unpredictable. Unlike in Britain, where policy grows from close relations between civil servants and powerful private interests, or in Germany, where predictability follows the rule of law, or in France, where regulation tends to follow orderly bureaucratic routine, governmental action in Washington is capable of dramatic swings. The knowledge that government can do unpredictable and significant damage and that loud protest and persistent challenge can make a difference leads to an industrial strategy of active resistance in regulatory affairs.

Political and economic circumstances unique to the U.S. chemical firms also result in a different ranking of regulatory priorities. International harmonization, while potentially useful as a means to bridle the excesses of regulators at home, receives much less attention than it does in Europe. Regulations affecting the marketing of American products in European countries are a minor problem, particularly in view of the success of European firms in achieving acceptable domestic arrangements. U.S. firms thus direct their attention to more pressing problems at home: the costs of testing both new and existing chemicals, growing paperwork burdens, the protection of trade secrets, and the suspected determination of some regulators to achieve a risk-free environment.

The diversity of the American chemical industry, with its many firms of varying sizes and its specialized trade associations, is reflected in its regulatory behavior. Dow Chemical has fought regulation at every opportunity and

with all the resources it can muster.[60] DuPont, Union Carbide, and Monsanto have taken a more moderate stance and have sought to develop a reasonable working relationship with governmental officials.[61] Small companies, effectively represented by the Synthetic Organic Chemical Manufacturers Association (SOCMA) and spokesmen such as Elmer Fike of the Fike Chemical Company, have been among the most outspoken critics of regulation's impact on small-volume speciality chemicals.[62] The Chemical Manufacturers Association (CMA), the largest U.S. chemical trade association, has enjoyed a steady rise in influence during the regulatory debates of the 1970s, giving it a prominence that is considerably greater than UIC's in France but less than VCI's in Germany. However, as the representative of many firms with varying interests and styles, CMA frequently has been unable to find a position that represents the whole industry effectively. At these times, individual firms have preferred to plead their own case in Washington.

The American industry's strategy of active resistance can be illustrated by its response to two important regulatory events of the 1970s, the passage and implementation of the Toxic Substances Control Act (TSCA) and the attempt by the Occupational Safety and Health Administration to implement a generic policy on occupational carcinogens.

TSCA was the first American law aimed at the chemical industry as a whole. In the five years of debate prior to the law's enactment in 1976, the industry, relatively naive in the ways of Washington, received an intensive education in regulatory politics.[63] Much of that learning took place after 1975, when the industry resigned itself to the act's passage and organized to ensure that intervention would be manageable.[64] Chemical firms worked hard for selective, as opposed to comprehensive, test requirements, for a limit to the number of existing chemicals to be tested, for the exclusion of research and development chemicals and mixtures of approved substances, and for a

[60] Interviews at Dow Chemical, Washington, January 1981.

[61] Interviews at DuPont, Union Carbide, and Monsanto, Wilmington, Del., New York, N.Y., and Washington, D.C., January 1981.

[62] See Fike, op. cit.

[63] The Manufacturing Chemists Association (MCA later changed its name to CMA) established a Special Committee on Toxic Substances Legislation chaired by Richard Heckert, senior vice-president of DuPont. Heckert's committee was given authority to act for the industry without consultation, but as Heckert admitted, committee members had little idea about how to go about their task: "When I first got into this, I hadn't the foggiest notion of how things are done. There were so many turns in the road it was hard to keep up. The process just wasn't orderly. Sometimes days were spent on things not worth an hour, and sometimes important things were done fast" (see "How They Shaped the Toxic Substances Law," *Chemical Week,* April 27, 1977, p. 52).

[64] Ibid. *Chemical Week* relates how Heckert first tried to lecture Congressman Bob Eckart (D-Texas) on cancer data and the "good deeds" of the industry—with no success. Only when industry came around to the tactic of trading concessions did its influence begin to grow.

minimal package of data submissions for new chemicals prior to manufacturing.

To buttress its case, the industry contracted with Foster D. Snell, Inc., for a study on the economic impact of the proposed legislation. The report estimated overall compliance costs at $300 million to $1.3 billion and predicted that the number of new products would drop 10 to 20 percent in large firms and 75 percent in small companies.[65] It also forecast increased industry concentration, a move of research and development capacity abroad, fewer new low-volume chemicals, and other problems.[66]

When TSCA finally passed, chemical companies, with few exceptions, viewed it as tough but acceptable.[67] The act did convert chemicals into a "regulated industry," but industry efforts to make the law "acceptable" paid off in important ways.[68] The definition of new substances excluded those used for research and development as well as mixtures in which component chemicals were known to be safe. The amount of information required in new chemical notifications met industry conditions regarding confidentiality and record keeping. The number of existing chemicals to be scrutinized annually was set at fifty, down from the three hundred initially proposed. Prior to any action to ban or restrict use, EPA was required to give industry forty-five days notice to rebut the proposed action and then to secure a court injunction before the agency proceeded.[69]

The passage of the law did not end the debate. The industry has taken full advantage of the opportunities provided by the statute to challenge EPA's implementing decisions. In March 1977, EPA published its draft guidelines on

[65] Snell, Inc., op. cit. For a discussion of the study, see "Setting Up for Toxic Substances," *Chemical Week,* February 23, 1977, p. 58.

[66] In addition to the industry studies, a number of other attempts were made to assess the costs of TSCA. An EPA study in 1974 put the costs at between $40 and $45 million; a second EPA study in 1975 increased the estimate to between $78 and $141.5 million; a 1975 GAO report put the annual cost at $100 to $200 million. For a good review of these studies, see George S. Dominguez, *The Business Guide to TOSCA: Effects and Actions* (New York: John Wiley, 1979).

[67] DuPont, Monsanto, and Union Carbide, as well as CMA, endorsed the legislation. Among the steadfast dissenters were Dow Chemical and most small chemical companies, which continued to feel, with justification, that the law would hurt them the most. One indicator of the impact of TSCA is the literature that has appeared to help companies cope with their obligations under the law. George S. Dominguez of Ciba-Geigy has contributed considerably to this literature. See his *Business Guide to TOSCA* and his "Practical Business Effects" (Paper presented at the Executive Enterprise Institute, Washington, D.C., March 1981).

[68] Robert Zener, "The Toxic Substances Control Act: Federal Regulation of Commercial Chemicals," *Business Lawyer,* 32 (July 1977), 1685–1703.

[69] See "A Tough—But Acceptable—Toxic Chemicals Law," *Business Week,* October 25, 1976, p. 102.

the information needed for the inventory of existing substances. The industry complained that these requirements violated the spirit of the law, imposed extraordinary costs of data collection, especially on small firms, and threatened trade secrets.[70] After almost a year of deliberations, EPA issued its final rules for inventory reporting, sticking with its request for volume and site data but devising new procedures to protect confidentiality and to reduce the impact on small firms. A second fight came on the issue of guidelines for notification concerning new chemicals. The early draft brought heated opposition and threats of court action if modifications were not made. The absence of major difficulties with the notification scheme once it was in place suggests that reasonable and workable arrangements have emerged.[71]

The second major challenge came with OSHA's efforts in the late 1970s to

[70]Meagher, op. cit.

[71]There were some indications that industry did not fully comprehend the long-term implications of regulation's impact on innovations. Throughout the debate about implementing TSCA, more and more arguments are raised about changing patterns of investment, from offensive investment (the development of new products) to defensive investment (the protection of existing products). See Philip H. Abelson, "Regulation of the Chemical Industry," *Science,* 202 (November 3, 1978), 473, and Jackson R. Browning, "The Hidden Costs of Regulation," *Chemical Week,* March 4, 1981, p. 5. Browning, who heads the unit on Environment, Health, and Safety Affairs at Union Carbide, argues that a growing share of capital investment made by U.S. industry is mandated by law. Since regulation has increased the uncertainty of research and development, regulation has also made it less and less attractive. In Browning's words, "Is it worth investment in R and D when the potential commercial application may lie a decade in the future and across a regulatory minefield?" Abelson, in quoting TSCA directly, reminds us that Congress calls for regulations that are "not to impede unduly or create economic barriers to technological innovation while fulfilling the primary purpose . . . to assure that such innovation and commerce . . . do not present an unreasonable risk."

Evidence of the growing regulatory burden was readily available in the pesticide industry, which was deep in the throes of reexamining the safety of existing products through the RPAR process. In 1978 the industry had twenty-five chemicals constituting between $350 and $500 million in sales going through the process, and chemicals constituting between $650 and $850 million in sales in the pre-RPAR stage. In other words, 20 to 25 percent of the pesticide business was under scrutiny, resulting in a loss of much potential business and contributing to the fact that not a single new pesticide was registered in 1977, even though the industry spent between $200 and $300 million on research and development. See the *Chemical Marketing Reporter,* April 3, 1978, p. 74.

Curiously, there was some new sentiment in industry that TSCA had a "silver lining" and that, if the act was approached correctly, it could actually improve the position and performance of some chemical firms. Remarkably, this view was expressed by Elmer Fike, one of the most adamant opponents of TSCA for its impact on small companies. Fike argued that the small firms' advantage has always been adaptability and that this advantage could be put to use in coping with TSCA. See his "The Small Company and TSCA." See also "Living with the New Regulations," *Modern Plastics,* September 1977, pp. 51–71.

Academic work on the impact on chemical innovation also has begun to appear. See, especially, Hill, op. cit. In "The Effects of Health and Environmental Regulation on Technological Change in the Chemical Industry," Ashford and Heaton argue that regulations properly conceived can be "technology forcing," encouraging creative responses to industrial development. They go on to assert that the chemical industry has adapted well to regulations thus far, and then they give recipes for regulatory design that will produce the desired results.

develop a generic policy for regulating occupational carcinogens. OSHA's initiative (discussed in chapters 4 and 8) elicited an immediate and strongly negative reaction from industry. Spokesmen were wary of any policy that played on the fears of an "epidemic of cancer" or that could lay the foundation for a larger national cancer policy.[72] The industry mobilized as never before. In late 1977, the major chemical firms created the American Industrial Health Council to fight the policy. AIHC's first objective was to upgrade and coordinate scientific positions. As we observed in chapter 8, industry stressed the scientific uncertainty surrounding several issues relating to carcinogenicity as well as the pitfalls of automatic policy responses when scientific issues remained cloudy.[73] Spokesmen argued that the policy would "freeze science" and deny flexibility in testing. AIHC also called for the establishment of a science panel, independent of the regulatory agency, to make judgments about scientific questions (see chapter 7).[74]

Industry feared that OSHA was pursuing the unobtainable objective of a

[72]The cancer mentality and movement are carefully explored by Robert Rettig, *Cancer Crusade* (Princeton: Princeton University Press, 1977). See the comments of Ronald Lange of the Synthetic Organic Chemical Manufacturers' Association in *Chemical Week,* October 12, 1977, p. 18. Monte C. Throdahl of Monsanto put it directly in a speech to the Chemical Manufacturers' Association on November 22, 1977: "The way the present carcinogens issue is handled today will ultimately dictate the future not only of the Toxic Substances Act but of regulation and probably the future of our industry."

[73]In the words of one observer, "Never have so many been given so much power to effect so little of value by the regulation of what they understand so meagerly." Attributed to Wardell Harris, Penn State University, and quoted by Monte C. Throdahl, remarks at the Toxics Control Conference of the Government Institutes, Inc., Washington, D.C., December 11, 1979. The AIHC refutation of the "epidemic of cancer" argument and the data to support it can be found in AIHC, "AIHC Recommended Alternatives to OSHA's Generic Carcinogen Proposal," OSHA Docket no. H-090, February 24, 1978, pp. 1–8. DuPont makes much the same argument in its publication, *Occupational Safety and Health: A DuPont Company View* (Wilmington, Del.: DuPont, 1980), pp. 26–28. See also Thomas H. Maagh, "Industry Council Challenges HEW on Cancer in the Workplace," *Science,* 202 (November 10, 1978), 602.

[74]Cf. chapter 7 herein. See also AIHC, "AIHC Proposal for a Science Panel," Washington, D.C., March 18, 1980. The panel would exist to separate the scientific function from the regulatory function in policy decisions. The scientific function is to identify and estimate risk; the regulatory function is to devise methods of risk avoidance. The panel would be established in government but outside any particular agency, and it would be involved through agency referral. It would be composed of fifteen members drawn from different disciplines who would serve three-year terms and would be appointed by an "objective" group of eminent scientists such as NAS. The panel's primary task would be to assess risk on a case-by-case basis, and it would be immune from litigation. A similar proposal was advanced by the Office of Science and Technology Policy in its report "Identification, Characterization, and Control of Potential Human Carcinogens: A Framework for Federal Decision-Making," Washington, D.C., February 1, 1979. It proposed that the panel be under the jurisdiction of the NTP. AIHC endorsed this report.

risk-free society by mandating that all exposures be reduced to the lowest feasible level. It advanced the view that some risk is inevitable and that policy benefits should be based on the assessment of relative risks.[75] The chief task of the proposed science panel would be to conduct quantitative risk assessments. Moreover, OSHA should consider both the costs and the benefits of proposed standards: benefits should be commensurate with the costs of achieving them.[76] AIHC insisted that this consideration did not entail less regard for human health: AIHC is "not advising trading dollars for lives. What we are talking about is making the best use of limited dollars so that society's limited resources can wisely be spent."[77]

Industry again contracted Foster D. Snell, Inc. to assess the economic impact of the OSHA plan. The results, using the most extreme scenario, in which 2,415 substances were regulated, projected $88 billion in capital costs.[78] Industry's case was strengthened by national economic difficulties in the late 1970s and by the general move toward a more cost-effective approach to regulation.

These efforts produced a number of significant changes in the OSHA proposal. In the opinion of industry leadership, "AIHC's efforts contributed to a much more flexible OSHA policy, the group of materials has been markedly narrowed and broad generic approaches have been blunted."[79] More specifically, AIHC convinced OSHA to adopt a priority risk assessment mechanism that met most of industry's criteria for determining the relative risks of identified carcinogens. Some within OSHA were also attracted to the idea of a science panel, but only if it involved governmental employees and

[75] For a good critical discussion of the American ideal of absolute safety at any cost, see Gio Batta Gori, "The Regulation of Carcinogenic Hazards," *Science,* 208 (April 18, 1980), 256–62. Gori sees the all or nothing response of American regulators slowly changing: "Gradually, loftier views are giving way to a realism that expects regulation to improve the quality of life for the living, not merely to extend life expectancy." When absolute safety goes, it becomes "the business of regulators to define tolerable levels of risk" (p. 256). This is a position that industry heartily endorses.

[76] The point is made in AIHC, "AIHC Recommended Alternative to OSHA's Generic Carcinogen Proposal," and idem, "Toward a Sound Public Policy on Carcinogenic Agents: AIHC Comments on Chapters I, VI, VII of the Public Review Draft of the Report to the President by the Toxic Substances Strategy Committee," Washington, D.C., October 15, 1979.

[77] Quoted in *Chemical and Engineering News,* July 3, 1978, pp. 14–15.

[78] See Foster D. Snell, Inc., "Preliminary Estimates of Direct Compliance Costs and Other Economic Effects of OSHA's Generic Carcinogen Proposal on Substance Manufacturing and Using Industries," 1978. For a description of the study, see "Industry Capital Costs Seen Skyrocketing If Generic Carcinogen Plan Goes Through," *Chemical Marketing Reporter,* April 13, 1978, p. 3. In later interviews with us, several industry spokesmen indicated that the industry lost some credibility when it announced these enormous costs. The study was roundly criticized by those on both sides of the regulatory debate.

[79] AIHC, "1980 Report to the Membership," Washington, D.C.

examined a limited range of evidence. Moreover, AIHC was assured that OSHA would consider regulatory measures other than engineering controls, long opposed by industry because of exorbitant costs. All in all, industry was encouraged by these changes but ultimately remained unsatisfied with the results, filing suit against the agency in January 1980.[80]

In both examples, the American chemical industry adopted the same strategy: to protest loudly and resist actively all efforts by government to increase the regulatory burden at every twist and turn of the policy process. A less aggressive posture would permit regulatory proponents to seize the initiative and make an unfavorable swing in policy more probable. The two examples also demonstrate the limited but very real effectiveness of this strategy. Actual regulatory burdens have grown, but they have grown at a slow and manageable rate, a rate not unlike that in Europe.

While American industry has generally met its regulatory objectives, success has come at high cost. Success in the open and adversarial American setting requires effective industry organization and coordination of views, the marshalling of scientific and economic evidence, the education of a skeptical public, and constant vigilance and activity from one end of the policy process to the other. The American reluctance to "decide" an issue also requires that industry always be prepared to renew the fight.

Conclusion: Industrial Impact on the Regulatory Process

The principal lesson of our cross-national analysis of regulatory politics is that the key determinants of strategies for meeting regulatory challenges are the wider patterns of industry-government relations and the narrower features of national regulatory policy making. Informal consultation in Britain, formal cooperation in Germany, acceptance and adaptation in France, and active resistance in the United States are approaches that grow logically from national "rules of the game." As regards the procedural rules for participating in the regulatory debate, industry leaders are rule takers, not rule makers. Even in the pursuit of international harmonization, so important to the Germans and the British, the desire is to export a more congenial national approach, not to impose a new global process. The relative sizes and strengths of various industries only marginally affect these patterns of behavior. The German chemical industry, long a potent force in the national economy, is no

[80] The composition and powers of the science panel, the limited use of risk assessment, and the continued emphasis on engineering controls as opposed to performance standards were among the reasons for filing suit. Interview at AIHC; AIHC, "1980 Report to the Membership."

less willing to adapt and play by national rules than are the French or American industries, whose relative economic importance is less.

Further confirmation of this conclusion derives from the behavior of multinational firms in different countries. In each of the countries under study, foreign firms have been quick to adopt the strategies of the domestic industry, frequently employing an employee who is native to the country and who is knowledgeable about domestic regulatory affairs to head their health and safety departments. Perhaps the most striking example comes from the activity of foreign firms in a country outside this study. In Canada, where the proximity to the United States and the overwhelming presence of American firms encourage us to overlook the differences in regulatory approach, American firms are quick to adopt new strategies tailored to the Canadian process, a process that more closely approximates the British than the American design.[81]

At the same time, each chemical industry has been remarkably adept at using existing national processes to its full advantage. British and German firms have taken every opportunity to consult and cooperate, pressing their concerns about economic impact and technical feasibility. U.S. firms have used the multiple channels of access and the procedural complexities of the American system to moderate and modify governmental proposals. French firms have counted on the role of the state as entrepreneur as well as regulator to assure a reasonable regulatory burden. All four industries have been successful, not in preventing regulation altogether, but in making certain that it poses no serious threat to the future of the industry.

Because industry is quick to adapt to and play by the prevailing rules in each country, its activities tend to reaffirm the strengths and weaknesses of each regulatory process that have been identified in preceding chapters. In dealing with the scientific uncertainty endemic to chemical risk assessment, for example, European firms are confident that issues will be managed in a fair-minded way. They have no incentive to upset the tacit consensus that links uncertainty with regulatory caution. American firms, by contrast, have wholeheartedly entered the scientific fray in an attempt to use uncertainty as a means to slow hostile regulatory action or to prevent it altogether. The vigorous reaction of the industry to OSHA's generic cancer policy, a deliberate agency effort to "settle" some scientific issues, is the best example of industry's recognition that to abstain from or concede defeat in the scientific debate in the United States constitutes a significant loss of influence over the process as a whole.

Throughout the book, we have also pointed to the higher costs associated with the design and implementation of regulations for chemical control in the

[81] For a discussion of Canada, see Ilgen, "Between Europe and America."

United States compared to their cost in the three European countries. In the United States, costs in time, money, and manpower derive both from the extensive participation of interested parties and from the scientific, legal, and economic argumentation. These costs are borne by industry no less than by other American actors. Industry's willingness to absorb these ever-increasing costs encourages similar behavior among its regulatory opponents and affirms the tendency toward a steady escalation of costs for the process as a whole. While costs for firms vary among the three European countries, they are markedly lower than expenditures made by firms in the United States and have remained relatively constant.

Both the inability of the American process to resolve regulatory issues and the high costs of reaching decisions have contributed to the growing public dissatisfaction with governmental programs of social regulation. American industry has encouraged this declining legitimacy by constantly challenging government's right to intervene as well as the nature of its intervention. Given the ambivalence surrounding the state's proper role, the public is receptive to industry arguments. Deregulation, currently pushed by many politicians, economists, and businessmen, has rapidly gained a following from a public that has come to expect government to perform badly. In Europe, regulation is less under attack, and the role of the state is more fully accepted; industry, accordingly, has no need to take its case to the public or otherwise to undermine the legitimacy of governmental action.

Industry behavior affirms and further contributes to tendencies we have uncovered in other aspects of the regulatory process. Chemical firms consistently use the rules of the game for their own purposes, often at the expense of public objectives. Even in the United States, where the regulatory process has been purposely designed to frustrate the efforts of powerful special interests, chemical leaders have found ways to make manageable the burdens of chemical control.

10

The Advocates of Regulation

This chapter assesses and compares the political behaviors, backgrounds, and policy influence of the three groups that in each country have taken the lead in advocating governmental controls on toxic chemicals: consumer associations, which include food safety issues among their concerns; environmental groups, which have a record of involvement in restraining the use of pesticides and limiting other forms of chemical pollution; and trade unions, whose concerns about toxic chemicals have focused on hazards in the workplace.[1] The analysis fills in several of the remaining blanks in the characterization of national regulatory systems. How have these groups defined their objectives, mobilized their resources, and fashioned their tactics to promote the interests of environmental protection and public safety? Compared to the varied but uniformly successful strategies of national chemical industries, as analyzed in the last chapter, how influential are they in shaping the regulatory policies of their respective governments?

The delineation of the role of these groups in national regulatory politics offers, in addition, an opportunity to address more general questions about comparative interest group behavior. How do groups with variable political resources, such as labor and consumer organizations, behave when they

[1] Advocacy groups sometimes involved in chemical control but not examined here include the organic farming/natural foods movement, wildlife sports associations, professional societies, and public interest associations that operate only at the local or regional level.

tackle the same kind of issue? Do organizational priorities and political tactics depend more on features intrinsic to the groups themselves or on the national policy context in which they operate?

In exploring these questions, the analysis uncovers and then explains an apparent anomaly: despite vastly different structures, resources, and strategies of intervention, all these groups manage to exert only limited influence on the shape and pace of regulatory policy in each of the four countries. There is, however, no single factor that accounts for this limited role. Instead, circumstances that are peculiar to each group and to its particular national context combine to make advocacy politics everywhere an important but far from determining voice of policy change.

Players and Strategies

Reflecting the parallel economic and social development of the four countries, organizations now active in promoting chemical safety rose to national prominence at approximately the same times. Environmental groups were created in two waves: older associations, often dating back to the nineteenth century and primarily oriented toward nature conservation and wildlife, have been joined in the past two decades by a newer generation, whose interests focus more on the safety of advanced technologies and on other adverse effects of massive industrialization. Most consumer associations became politically active in the 1950s and 1960s, while organized labor has been a fixture on the national political scene of each country since the nineteenth century.

As intervenors in the national politics of chemical control, all these groups have relatively dispersed memberships and small central staffs. Altogether, the number of activists tracking national policy in the four regulatory areas of interest here is perhaps no more than twenty in each of the European countries and twice that many in the United States. Also, unlike industry, which uses its market-generated income to finance its political activities, most of these groups must rely on the voluntary contributions of their adherents or other financial resources. Only unions, which have a longer history and more economically motivated members, enjoy a measure of financial security. Similarly, union leaderships can exercise more hierarchical control over their members than can leaders of environmental or consumer groups.

As a rule, American public interest groups are more numerous and specialized than their counterparts abroad. In the area of food safety, for example, the most active U.S. groups are the Center for Science in the Public Interest, a small association specializing in food safety issues; the Community Nutrition Institute, which also lobbies on other food-related issues such as hunger and nutrition; and the Health Research Group, a branch of Ralph Nader's

network, which is active not only in food safety but also in drugs and occupational health. In each European country, in contrast, typically only one or two national consumer associations are active, and these tend to resemble more the Consumer Federation of American and Consumers Union in their broad-based efforts to promote consumer interests.

Environmental groups follow the same pattern. Such leading American organizations as the Sierra Club, the National Audubon Society, Friends of the Earth, the Environmental Defense Fund, the Natural Resources Defense Council (NRDC), and Environmental Action are all aggressively engaged in chemical control at the national level. But only two German groups, the Bund für Umwelt und Naturschutz Deutschland and the Bundesverband Bürgerinitiativen Umweltschutz, are prominent in the area; although they are nationally organized, their activities are mainly directed toward local and regional issues. Only with the advent of the Green party in the late 1970s did German environmentalism become a more cohesive political force at the federal level. French environmental groups are numerous, fragmented, and politically weak; none has become a noteworthy national champion of the need for chemical control. Three of the more active and visible groups are Amis de la Terre, the Fédération Française des Sociétés de Protection de la Nature (FFSPN), and SOS Environnement. Environmental associations in Britain include the older Council for the Protection of Rural England and the newer activist associations, Friends of the Earth and the Conservation Society.

Chemical workers' unions reflect the organizational features of national labor movements.[2] German chemical workers have the most monolithic organization, with both blue- and white-collar employees belonging to a single union, the Industriegewerkschaft Chemie-Papier-Keramik (IG-Chemie). The union belongs to the sole German labor federation, Deutscher Gewerkschaftsbund (DGB). The French labor movement is the most fragmented; it has four national federations and a separate association for white-collar workers but no umbrella organization representing labor as a whole. Most chemical workers belong to the chemical industry section of either the Confédération Générale du Travail (CGT), which is tied to the French Communist party, or the Confédération Française Démocratique du Travail (CFDT), which is affiliated with the French Socialist party. Chemical workers in the United States, as in France, belong to several competing unions, the

[2]On European labor movements and their political role, see Marguerite Bouvard, *Labor Movements in the Common Market Countries: The Growth of a European Pressure Group* (New York: Praeger, 1972); Jack Barbash, *Trade Unions and National Economic Policy* (Baltimore: Johns Hopkins University Press, 1972); Gerald A. Dorfman, *Government versus Trade Unionism in British Politics since 1968* (Stanford: Hoover Institution Press, 1979); David P. Conradt, *The German Polity* (New York: Longman, 1978).

largest of which are the International Chemical Workers Union; the Oil, Chemical, and Atomic Workers (OCAW); and the Steelworkers. Similarly, in Britain, chemical workers are represented by several unions, most prominently the more white-collar Association of Scientific, Technical, and Managerial Staffs, and the General and Municipal Workers' Union. Both countries, like Germany, have a single labor confederation incorporating most industrial sectors (AFL-CIO in the United States and the Trades Union Congress in Britain). With trends in chemical union memberships following national labor patterns generally, the percentage of unionized workers is higher in Britain and Germany than in France and the United States.

Policy Objectives

Chemical safety is not the exclusive concern of any of these groups. Thus, the priority accorded to chemical control relative to other organizational goals is an important parameter in defining their role in regulatory politics. In this respect, American groups of every type stand out by their sustained attention to the issue. To a far greater extent than in Europe, controlling the hazards of chemical technology looms large in the strategies of American advocates.

The contrast in priority is most noticeable among environmental groups. Many U.S. organizations, led by NRDC and EDF, attach great importance to toxic chemicals and track the issue's development in all relevant regulatory programs. But no major environmental group in Europe has made toxic chemicals a principal rallying cry. Instead, organizational emphasis is placed on the natural habitat or on other technologies, especially nuclear power.[3] These issues reflect a general orientation among European environmentalists to focus on ecological deterioration rather than threats to public health. When specific chemicals such as PCBs, DDT, and other organochlorine pesticides became objects of concern, they were attacked as much for their harmful effects on the biosphere as for their effects on human health. The threat of cancer is notably less prominent as a mobilizing issue.

In turn, the agendas of many European associations give priority to procedural reforms, including the ability to bring suit (in Germany), administrative decentralization (in France), and greater access to information (in all three European countries). American environmental groups, having already acquired by law extensive guarantees of openness and legal access, tend to

[3]Favored themes of European environmental movements are developed in their periodicals: *Natur und Umwelt*, published by BUND; *Umweltmagazin* (BBU); *La Baleine* (Amis de la Terre); *Combat Nature* (Associations Ecologiques et de Défense de l'Environnement); etc. Also, interviews with environmental leaders in Bonn, Paris, and London, Summer 1980.

address procedural issues only when these prerogatives are threatened or curtailed. The public availability of industry-supplied information on health effects was a prominent procedural concern of U.S. environmentalists in the early 1980s. American groups also tend to advocate the centralization of environmental decision making at the federal level, where their political resources are most effectively deployed.

Another notable contrast between American and European environmentalists is the specificity of their respective regulatory strategies. Groups in the United States, at least those most involved in toxic chemical regulation, formulate detailed objectives on even the most technical aspects of lawmaking, risk assessment, and administrative implementation. The goals of the environmental movements in Germany and France and, to a lesser extent, Britain are more likely to remain at the level of broad principles aimed at overall environmental enhancement or even the massive restructuring of industrial society. The 1979 NRDC annual report, for example, gives a fairly detailed picture of the current agenda confronting U.S. regulators, noting the organization's efforts to find solutions to such concrete problems as premarket testing guidelines under TSCA.[4] The literature of the French association Amis de la Terre of the same period scarcely mentions that a similar French law was passed and was undergoing implementation; instead, there is an abundance of quasi-philosophical expositions on the various tenets of "ecological democracy."

National consumer groups also show variable interest in toxic chemical hazards. The most prominent British group, the Consumers' Association, gives food safety policy only passing attention, and its occasional pronouncements are usually supportive of the governmental position. During the 1970s, its principal organ, the consumer periodical *Which?*, published testing results on only two substances of relevance, nitrites in ham and products containing asbestos, noting simply in each case that results were within statutory or recommended limits. In contrast, American groups have vigorously pursued tighter controls on a wide range of food additives and contaminants, including saccharin, DES, nitrites, PCBs, aflatoxins, lead, coal-based colors, and acrylonitrile.[5] The three U.S. consumer groups most involved in food safety policy staunchly defend the Delaney clause, but this zero-risk principle is not a prominent objective of any European association.[6]

[4] NRDC, "Annual Report, 1978/79," New York.

[5] Documents of the Community Nutrition Institute, the Health Research Group, and Center for Science in the Public Interest; interviews, Washington, D.C., 1980 and 1981.

[6] Ibid., and interviews with consumer association leaders in Washington, D.C., November 1980 and April 1981.

French and German consumer associations resemble American groups in the relative priority they accord to food safety, but their campaigns are more selective. The Union Française des Consommateurs (UFC) has launched consumer awareness programs on aerosols, asbestos products, food colors and preservatives (amaranth, in particular), hair dyes, and polysterene as a food packaging material.[7] A major campaign in 1980 was directed toward the continued use of DES and other estrogens in veal.[8] The Deutscher Verbraucherschutzverband (DVS) has addressed such issues as CFC-propelled aerosols, lindane and other pesticides, chromium, PCBs, and chemicals added to animal feed. Another German group, the Arbeitsgemeinschaft der Verbraucherverbände (AGV), whose literature is somewhat less polemical and less focused on food safety matters than that of DVS, has taken stands on colors, nitrites, and saccharin.[9]

Among the three types of organizations, chemical workers' unions show the greatest cross-national similarity in their chemical control objectives. For years, worker health and safety was not a top priority of unions, as they founded their political activities on more traditional bread-and-butter concerns and more general political aims. But in recent years, all have raised worker health and safety issues to new prominence. The turning point was the passage of key worker protection statutes in each country. In the period immediately preceding and subsequent to the enactment of the OSH Act and counterpart legislation in Europe, unions took measures to reinforce their staffs, expertise, and programs in the health and safety area. European unions placed initial priority on building up their presence in health and safety matters at the plant level, including the election and training of safety representatives in Britain, the functioning of health and safety committees in Germany and France, and the provision of information on toxic hazards to workers in all three countries.[10] Until recently, and unlike the situation in the United States, European unions have had only limited involvement in standard setting for health hazards; their traditional focus has been workplace safety. Organized labor in all four countries now expresses general satisfaction with

[7] *Que Choisir?* is published monthly by UFC, Paris. Another French group, Laboratoire Coopératif, has published articles on a wide range of chemical hazards, particularly food additives and contaminants, in its publication *Bulletin d'information* (Saint Mire), published bimonthly.

[8] *Le Monde*, November 16, 1980.

[9] Publications and internal documents of DVS and AGV; interviews at AGV, Bonn, June 1980.

[10] *Health and Safety at Work*, July 1980, p. 17; P. Auer et al., "'Humanization of Work' between Labor Unions and the State: A Survey of Seven Countries," International Institute for Comparative Social Research, Berlin, February 1980; Confédération Française Démocratique du Travail, *Hygiène et sécurité dans l'entreprise* (Paris: Montholon, 1978).